

# **GADSDEN, ARIZONA WASTEWATER COLLECTION AND CONVEYANCE SYSTEM PROJECT**

## **ENVIRONMENTAL ASSESSMENT**

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## **1.0 BACKGROUND**

### **1.1 INTRODUCTION**

The United States (U.S.) Environmental Protection Agency (EPA) provides funds for the design and construction of water and wastewater infrastructure projects within 100 kilometers of the international boundary between the U.S. and Mexico. The Proposed Action (the “project”) under consideration for funding is the construction of a wastewater collection system for the unincorporated Townsite of Gadsden (Gadsden), Arizona, construction of a force main from Gadsden to the City of San Luis, Arizona to transport the collected wastewater to the San Luis wastewater treatment plant and the purchase of 57 thousand gallons per day of capacity from that treatment facility. In 1999, before the EPA became involved in the project, the U.S. Department of Agriculture, Rural Development (USDA-RD), as lead federal agency, completed an environmental assessment, analyzed the proposed alternative actions and selected the preferred alternative (Alternative D) for the project. The first phase of the project, which included project design and construction of a small portion of the collection system, was initiated and is now complete. The EPA has since been asked to help provide funds for the remaining phase of the project. EPA policy for financing border infrastructure projects requires certification by the Border Environment Cooperation Commission (BECC). This environmental assessment (EA) has been prepared to satisfy the BECC certification criteria, and to comply with the provisions of the National Environmental Policy Act (NEPA). This assessment will provide analyses of the impacts for all of the alternatives that had been originally considered.

### **1.2 ENVIRONMENTAL ASSESSMENT PROCESS**

EPA has determined that it will follow the NEPA and EPA regulations contained in Title 40 Code of Federal Regulations (CFR) Part 6 for environmental impacts in the U.S. from projects located in the U.S. or Mexico (EPA 1997a). EPA follows the U.S. Agency for International Development (AID) approach as summarized at Title 22 CFR Part 216.1-216.10 as guidance for assessing environmental impacts in Mexico. The AID regulations envision collaboration with affected countries to the maximum extent possible in developing an EA. AID regulations authorize use of either a study prepared by an international body in which the U.S. is a participant, or a concise review of the relevant environmental issues, with appropriate documentation, as a substitute for an EA.

This EA was prepared using Council of Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508) and EPA regulations (40 CFR Part 6) as guidance. This EA documents the environmental consequences in the U.S. of the proposed federal action. Transboundary impacts to Mexico are included in this EA to satisfy AID regulations pertaining to environmental analysis outside the U.S. Where potential transboundary impacts are anticipated, they are discussed in the environmental consequences portion of the individual resource sections.

### 1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION

There is no existing centralized sewage collection system within Gadsden. The only waste disposal facilities that exist are on-site treatment systems. These consist primarily of septic tank and leach field systems although there are a few cesspools. There are also some open discharge ditches. These systems are generally old and many are failing due to age and inadequate maintenance.

The purpose of the Proposed Action is to address the human health and environmental issues relating to contamination of water, both surface and groundwater. Failed and failing septic systems on individual lots allow wastewater to surface and flow to ditches and low-lying areas where surface water collects, creating an unacceptable risk of contact by residents and the possibility of contamination of groundwater and drinking water sources.

EPA intends to award a Border Environment Infrastructure Fund (BEIF) grant to the Gadsden Improvement District to implement the Proposed Action. These funds will be used to finance construction of a wastewater collection system, a force main to convey wastewater to the treatment plant located approximately four (4) miles to the south in San Luis, Arizona, the cost of building the extra capacity into the San Luis treatment plant and some transition assistance to help the community adjust to higher rates. The proposed project will protect public health and the environment by eliminating untreated sewage discharges and leakage from faulty treatment systems in Gadsden.

### 1.4 SCOPE OF EA

The EA focuses on a proposed wastewater collection and conveyance system project in Gadsden, Arizona and the potential direct, indirect, secondary, and cumulative environmental impacts to the U.S. and Mexico from construction and operation of the proposed improvements.

In preparing an EA, EPA examines various federal crosscutting laws and Executive Orders (EOs) in accordance with 40 CFR 6.300. These laws and EOs are described below:

**National Natural Landmarks** - The Secretary of the Interior is authorized to designate areas as National Natural Landmarks for listing on the National Registry of Natural Landmarks pursuant to the Historic Act of 1935, 16 U.S. Code (USC) 461 *et seq.* In conducting the environmental review of the Proposed Action, EPA is required to consider the existence and location of natural landmarks, using information provided by the National Park Service (NPS) pursuant to 36 CFR 62.6(d). No natural landmarks listed on the National Registry of Natural Landmarks were identified within the Project Area.

**Cultural Resources Data** - The *Archeological and Historic Preservation Act* (AHPA) of 1974, 16 USC 469 *et seq.* provides for the preservation of cultural resources if an EPA

activity may cause irreparable loss or destruction of significant scientific, prehistoric, or archeological data. In accordance with the AHPA, the responsible official or the Secretary of the Interior is authorized to undertake data recovery and preservation activities. Consultation with the Arizona State Museum (ASM), the Arizona State Historic Preservation Office (ASHPO), and tribes are discussed in Section 3.3.

**Cultural Resources** - The *National Historic Preservation Act* (NHPA), as amended, 16 U.S.C. 470, directs federal agencies to integrate historic preservation into all activities which either directly or indirectly involve land use decisions. The NHPA is administered by the National Park Service (NPS), the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs), and each federal agency. Implementing regulations include 36 CFR Part 800: *Regulations of the Advisory Council on Historic Preservation Governing the NHPA Section 106 Review Process*. Section 106 of the NHPA requires federal agencies to take into consideration the impact that an action may have on historic properties which are included on, or are eligible for inclusion on, the National Register of Historic Places (NRHP). The Section 106 review process is usually carried out as part of a formal consultation with the SHPO, the ACHP, and other parties, such as Indian tribes, that have knowledge of, or a particular interest in, historic resources in the area of the undertaking. Consultation with the Arizona State Historic Preservation Office (ASHPO), the Arizona State Museum (ASM), and tribes are discussed in Section 3.3.

**Wetlands Protection** - EO 11990, “Protection of Wetlands” of 1977, requires federal agencies conducting certain activities to avoid, to the extent possible, adverse impacts associated with the destruction or loss of wetlands and to avoid support of new construction in wetlands, if a practicable alternative exists. Discharge of dredge or fill material into wetlands and other waters of the U.S. are also regulated under Section 404 of the Clean Water Act. No wetlands in the U.S. will be filled or otherwise impacted by the Proposed Action.

**Floodplain Management** - EO 11988, “Floodplain Management” of 1977, requires federal agencies to evaluate the potential effects of actions they may take in a floodplain to avoid, to the extent possible, any adverse effects associated with the direct and indirect development of a floodplain. None of the aspects of the Proposed Action occurs within the 100-year floodplain due to a protective levee between the community and the Colorado River. It does, however, lie within the 500 years floodplain, as does all of southern Yuma County.<sup>1</sup>

**Important Farmlands** - EPA Policy to Protect Environmentally Significant Agricultural Lands requires EPA to consider the protection of the nations’ significant/important agricultural lands from irreversible conversion to uses that result in their loss as an environmental or essential food production resource. Moreover, the Farmland Protection Policy Act (FPPA), 7 USC 4201 *et seq.*, and the U.S. Department of Agriculture’s (USDA) implementing procedures require federal agencies to evaluate the adverse effects of their actions on prime and unique farmland, including farmland of statewide and local

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<sup>1</sup> Stantec Consulting, Inc. Preliminary Engineering Report for Gadsden, AZ. Sewer Connection Project, 1999.

importance. The project does not involve conversion of, or otherwise affect, prime, unique, or important farmland.

**Coastal Zone Management Act** - The Coastal Zone Management Act (CZMA), 16 USC 1451 *et seq.*, requires that federal agencies in coastal areas be consistent with approved State Coastal Zone Management Programs, to the maximum extent possible. If an EPA action may affect a coastal zone area, the responsible official is required to assess the impact of the action on the coastal zone. The Proposed Action will not affect a coastal zone area.

**Coastal Barrier Resources Act** - The Coastal Barrier Resources Act (CBRA), 16 USC 3501 *et seq.*, generally prohibits new federal expenditures and financial assistance for development within the Coastal Barrier Resources System (CBRS) and therefore protects ecologically sensitive U.S. coastal barriers. This project does not affect any coastal barriers.

**Wild and Scenic Rivers** - The Wild and Scenic Rivers Act (WSRA), 16 USC 271 *et seq.*, establishes requirements applicable to water resource projects affecting wild, scenic, or recreational rivers within the National Wild and Scenic Rivers System, as well as rivers designated on the National Rivers Inventory. No designated wild and scenic rivers occur within the Project Area.

**Fish and Wildlife Protection** - The Fish and Wildlife Coordination Act (FWCA), 16 USC 661 *et seq.*, requires federal agencies involved in actions that will result in the control or structural modification of any natural stream or body of water for any purpose, to take action to protect the fish and wildlife resources that may be affected by the action. No U.S. streams or water bodies will be modified by this project.

**Endangered Species Protection** - The Endangered Species Act (ESA), 16 USC 1536 *et seq.*, prohibits agencies from jeopardizing threatened or endangered species or adversely modifying habitats essential to their survival. Impacts on endangered species are considered in Section 3.2.3.

**Wilderness Protection** - The Wilderness Act (WA), 16 USC 1131 *et seq.*, establishes a system of National Wilderness Areas. The WA establishes a policy for protecting this system by generally prohibiting motorized equipment, structures, installations, roads, commercial enterprises, aircraft landings, and mechanical transport. No wilderness areas occur within the Project Area.

**Air Quality** - The Clean Air Act (CAA) requires federal actions to conform to any state implementation plan approved or promulgated under Section 110 of the Act. For EPA actions, the applicable conformity requirements specified in 40 CFR Part 51, Subpart W; 40 CFR Part 93, Subpart B; and the applicable state implementation plan must be met. Under the Federal Rule on General Conformity, 40 CFR Part 93, a conformity determination is required only when emissions occur in a non-attainment area. Impacts to air quality from the Alternatives are discussed in Section 3.1.1.

**Environmental Justice** - EO 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” and the accompanying presidential memorandum, advise federal agencies to identify and address, whenever feasible, disproportionately high and adverse human health or environmental effects on minority communities and/or low-income communities. Environmental justice considerations are discussed in Section 3.9.

## **2.0 PROJECT DESCRIPTION AND ALTERNATIVES**

### **2.1 CURRENT CONDITIONS**

The unincorporated Community of Gadsden, Arizona (Section 13, T 10S, R 25W) is situated near the east bank of the Colorado River in Yuma County four (4) miles north of San Luis and the Mexican border and 14 miles southwest of the City of Yuma in the extreme southwest corner of Arizona on US Highway 95 (Appendix A). The project area of concern for this EA includes the area around the town of Gadsden south to the vicinity of San Luis and including that length of the Wellton-Mohawk Salinity Canal and Santa Clara Wetlands and adjacent areas as they may be affected by the project’s discharge (see Appendix B). Gadsden currently has a population of approximately 950 (U.S. Census Bureau data), occupying approximately 230 residences. Existing land uses include residential and agricultural with some commercial, recreational and public service. Potable water, supplied by a well located at the east end of the community, is provided by a privately owned community water system to the majority of the town’s residents. There is no existing sewage collection system within the community. Waste disposal is limited to on-site facilities consisting primarily of septic tank and leach field systems. There are also some cesspools and some open discharge to ditches.

### **2.2 DESCRIPTION OF ALTERNATIVES (INCLUDING THE PROPOSED ACTION)**

#### **2.2.1 Alternative 1 – No Action**

A wastewater collection and conveyance system would not be constructed under Alternative 1. In the No Action Alternative, the current situation will continue as the project will not be engineered or constructed. Gadsden will continue to use individual on-site treatment systems with consequent failures and leakage leading to possible ground and surface water contamination. The No Action Alternative would not eliminate the health hazards associated with failing on-site sewage treatment units. There is also potential for future contamination of the groundwater currently used as the potable water supply for the community.

### **2.2.2 Alternative B – Upgrade, Repair or Replacement of Existing Disposal Systems**

Alternative B would consist of identifying specific existing on-site systems that are experiencing some degree of failure or that are incapable of treating the present contaminant load. Septic tanks or disposal fields would be repaired or replaced with new units that are correctly designed and installed.

The majority of existing on-site wastewater treatment units within the area of concern are in the form of septic tanks with leach lines. Existing wastewater treatment facilities are located on individual private properties requiring operational and maintenance costs to be borne by the property owner.

This alternative would address some of the health hazards associated with the failed or leaking systems but would not be applicable to many of the smaller lots where replacement options do not exist because of restricted area or seasonally high groundwater tables.

### **2.2.3 Alternative C – Community-wide Gravity Wastewater Collection System and Wastewater Treatment Plant**

Under this alternative, the Community would improve its wastewater management by constructing a community-wide wastewater collection system and a wastewater treatment plant. The improvements would include 8-inch sewer mains, 4-foot diameter Yuma County standard manholes, and 4-inch diameter sewer service laterals (household connection sewers) and would be constructed in a manner which allows wastewater to flow by gravity from the households to the treatment facility or main pumps stations, as required. The collection system for Gadsden would be designed to serve the current population base and additionally, the projected 20-year population growth. The collection system would be routed to existing residences and businesses only, though in some areas the collection system would necessarily pass along unoccupied, or undeveloped property in order to provide sewer service to existing residences and businesses. Construction of the sewer system would include the construction of house connections sewers and the abandonment of existing sewage on-site treatment systems.

The wastewater treatment plant would use a Total Containment Pond for biological treatment of the wastewater. Included in Alternative C would be the purchase of ten (10) acres of land and construction of a series of ponds of sufficient surface area to allow for a net yearly evaporation exceeding yearly inflow.

### **2.2.4 Alternative D – Proposed Action – Community-wide Gravity Wastewater Collection, Lift Station, and Force Main System (Route Highway 95)**

Alternative D, the Proposed Action, is identical to Alternative C in regards to the collection system construction, but does not include construction of a wastewater treatment plant in Gadsden. Instead, a lift station and force main would be constructed to



convey the wastewater from Gadsden to the city of San Luis for treatment and final effluent discharge.

Under this alternative, wastewater will be pumped approximately four miles south to the City of San Luis. A forced sewage system consisting of a single lift station and approximately 20,000 feet of 6-inch force main will be used as conveyance. The lift station will be located centrally within Gadsden and will be a duplex pump system housed in a 5-foot diameter underground basin having a wet well capacity of approximately 750 gallons. The required discharge capacity of the pump is 205 gallons per minute at a total dynamic head of 110-feet. Pumps will be electrically operated and provided with a secondary power source.

Gadsden will require approximately 57,000 gallons per day (gpd) of capacity from the San Luis wastewater treatment plant, which is currently under expansion. This figure represents the estimate of current wastewater flow from Gadsden to San Luis (approximately 45,000 gpd), plus an additional 30% to account for growth over the next twenty years. The proposed route would follow the alignment of U.S. Highway 95 south from Gadsden to Yuma County 22<sup>nd</sup> Street where it would connect to the gravity sewer line from the newly constructed San Luis High School. The treatment plant utilizes sequencing batch reactor activated sludge processes for primary and secondary treatment plus chlorine disinfection. It currently has a capacity of 0.75 million gpd and will be expanded to 1.6 million gpd. The plant discharges to the Wellton-Mohawk Salinity Canal, which eventually flows into the Santa Clara wetlands 30 miles south of the U.S. Mexican border. The plant is not currently operating under any specific regulatory requirements for effluent standards, but effluent quality has been maintained within typical secondary standards and should improve with the expansion. Regulatory requirements are expected to be established in the near future as a part of the City's NPDES permitting process. The plant treats sludge in an aerobic digester, followed by dewatering in drying beds on site and then agricultural application to alfalfa fields.

Alternatives D and E require an agreement, which has been established, between Gadsden and the City of San Luis to account for compensation for the cost of extra capacity in the expanded treatment plant, cost of extra lift station capacity into the plant and for a hook up fee. Operation and maintenance of the entire system will be handled by the City of San Luis, which will bill the citizens of Gadsden for the service.

### **2.2.5 Alternative E – Community-wide Gravity Wastewater Collection, Lift Station, and Force Main System (Route West Main Canal)**

Alternative E is similar to Alternative D with respect to the collection system and wastewater treatment, however, in Alternative E the proposed route for the force main would follow the alignment of the West Main Canal from Gadsden to a new lift station at the San Luis wastewater treatment plant. This alternative, like alternatives C and D, provides a complete sewer system for the whole community of Gadsden. It also includes a new lift station at Gadsden and a force main for receiving and transporting the collected wastewater for its treatment at the San Luis wastewater treatment plant.

### **3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

#### **3.1 PHYSICAL ENVIRONMENT**

##### **3.1.1 Air Resources**

###### Affected Environment

The area of concern for the proposed action lies within a non-attainment area. A non-attainment area exceeds any national ambient air quality standard (NAAQS) for any pollutant based upon the data collected through air quality monitoring.<sup>2</sup>

The pollutant that has exceeded the NAAQS in the area is Suspended Particulate Matter (PM<sub>10</sub>) – liquid and solid particles of various compositions with diameters of 10 microns or less. Particulates of this size are of concern because they may be inhaled and possibly cause various health effects.

Of the various vehicular-emitted air pollutants, carbon monoxide (CO) is the primary concern. Carbon monoxide is a project-by-project related concern because of its potential hazard to public health at excessive concentrations. Ozone (O<sub>3</sub>), Hydrocarbons (HC), and Nitrogen Oxides (No<sub>x</sub>) air quality concerns are regional in nature (complex atmospheric chemistry involving HC and No<sub>x</sub> as precursors lead to the formation of O<sub>3</sub>).<sup>3</sup>

###### Environmental Consequences

Environmental Consequences here and in the following subsections will consider direct, indirect (secondary) and transboundary impacts for each area of concern. However, only those impacts that exist and are relevant to the particular area of concern will be mentioned.

Under the No Action Alternative, construction and operational activities that result in particulate matter and hydrocarbons emissions would not occur because the proposed improvements to the wastewater collection system would not be implemented.

Construction and operation improvements associated with Alternatives B, C, D and E have the potential for both short and long-term impacts to air resources in the area of concern. During construction, fugitive emissions would be produced on-site by earthmoving equipment and by vehicular traffic traveling throughout the construction site. But use of appropriate construction methods would be used keep the generation of dust and fine particulate matter to a minimum. The quantity of these emissions would

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<sup>2</sup> Arizona Department of Transportation; Air Quality Report, prepared by Environmental Planning Section, Phoenix, AZ November, 1995.

<sup>3</sup> Logan, Simpson & Dye; US 95 – San Luis to 32<sup>nd</sup> Street Yuma County, Arizona, February 1997.

also vary and be dependent on the types and level of activities occurring and the weather conditions.

Construction equipment and other vehicles on the site during construction and operation for all but the No Action Alternative would produce vehicular emissions. These mobile source emissions would include small amounts of hydrocarbons, carbon monoxide, and nitrous oxides. A low density of emissions coupled with atmospheric dispersion would significantly decrease the impact of vehicular emissions offsite.

In addition to emissions due to construction and vehicles, Alternative C may produce long-term odor and air quality impacts associated with treatment ponds due to the volatilization of hydrogen sulfide, ammonia and methane. Alternatives D and E, by adding to the treatment load of the San Luis treatment plant, may also affect long-term impacts on air quality.

Because of the proximity to the border, all but the No Action Alternative have the potential for transboundary impacts to air quality similar to those mentioned above, depending on wind force and direction.

Alternatives B, C, D and E may also have minor indirect, or secondary, impacts on air quality as they will accommodate a moderate increase in population, which could result in additional vehicular emissions and construction dust. However, because the projected population growth is estimated to be small, about 200 over the next 20 years, the impact is expected to be insignificant.

### **3.1.2 Water Resources**

#### **3.1.2.1 Surface Water**

##### Affected Environment

In general, the watershed area is comprised of relatively flat farmland; the general slope of the land is south-to-southwesterly. The land surrounding the area of concern is a grid of irrigation delivery ditches and canals along with tailwater or drainage ditches in a north-south and east-west pattern. The surface water resources in the vicinity include the West Main Canal, which is adjacent to Gadsden and provides irrigation water to the Yuma valley irrigation district (U.S. Bureau of Reclamation, 2001). Drainage ditches provide shallow groundwater relief to surrounding areas in addition to providing storm water disposal. The water table varies from a depth of 0.8 – 4.8 m (2.5 – 16 ft) over the Yuma Valley. The drainage ditches presently flow either into the Colorado River or the Wellton-Mohawk Salinity Canal, depending on the levels of dissolved solids in the water, and then through whichever conveyance, across the border and into Mexico.

The Colorado River flows north to south between one quarter and ten miles to the west of the project area but is separated from the area by a protective levee.

## Environmental Consequences

Current operational activities of the on-site treatment systems would remain the same with the implementation of the No Action Alternative. Construction activities associated with the improvements of the wastewater collection system would not occur. Without access to a sewer system, the population would continue discharging the wastewater into some overloaded and failing on-site treatment units, adding to the risk of surface pooling of contaminated untreated wastewaters in the community. Under the No Action Alternative, short-term and long-term direct impacts to water quality would increase in the area of concern.

Implementation of Alternative B would address the majority of the issues of failing and overloaded on-site treatment units, and provide beneficial short and long-term impacts to surface water quality by ensuring that treatment systems and leech fields function adequately to handle on-site treatment effluent flows and avoid surface pooling.

Alternative C would create ponded surface waters in designated treatment lagoons, but by design these waters would not be released to U.S. waters.

Construction and operation activities associated with Alternatives B, C, D and E would not have significant short-term or long-term direct/indirect impacts to the surface water resources in or around the community of Gadsden. Impacts would not be expected either on the intermittent drainage of the Lower Colorado River or the West Main Canal. Construction activities associated with the Alternatives D and E would require mainly excavation in order to install the sewer pipeline network and the new transmission pipeline to the San Luis WWTP site. Although the possibility of an accident (e.g. construction vehicle fuel tank failure, pipeline rupture) is very remote, the wastewater transmission line would be monitored periodically in order to avoid any possible contamination at the construction site. Significant direct/indirect adverse impacts would not be expected to surface water in the short or long-term with the implementation of any of the action alternatives.

Under Alternatives D and E up to sixty (60) thousand gpd of wastewater flowing south from Gadsden would increase discharge from the San Luis wastewater treatment plant by up to 5 percent but would increase flow in the Wellton-Mohawk Salinity Canal by a considerably smaller percentage (much less than 1%). This water, flowing down the canal and into the Santa Clara wetlands, would have a positive impact, howsoever minor, on an important salt marsh wetland at the head of the Sea of Cortes.

### 3.1.2.2 Groundwater

#### Affected Environment

The area of concern overlays the Lower Colorado River Basin and the Yuma Basin.<sup>4</sup> In the Colorado River Basin, groundwater wells pump Colorado River water for potable and non-potable uses to the Cities of Somerton and San Luis and the communities of Gadsden and the Cocopah Indian Tribe. The unincorporated community of Gadsden has three wells but one is not in service. The two wells in service are approximately 185 feet deep and produce 450 gallons per minute (gpm) each.<sup>5</sup>

The City of San Luis water source is an aquifer several hundred feet below surface. They have eight groundwater wells, but one is not used because of water quality. Of the eight groundwater wells, four of them produce 200 gpm each, two of them produce 500 gpm and one produces 1,100 gpm. The City of San Luis is within the USBR “Five Mile Zone”<sup>6</sup>

The “Five Mile Zone” is a protected and regulated pumping unit located within a five mile strip of land along the U.S./Mexico border. The strip of land extends from the vicinity of the City of San Luis, to an area thirteen miles to the east. This unit is a well field and canal delivery system called the 242 Well Field. It intercepts part of the groundwater underflow that moves southward into Mexico from the Yuma Mesa. The groundwater recovered by the unit is collected in a conveyance system (the 242 lateral) and is delivered to Mexico by the United States as a portion of treaty obligations. The treaty limits pumping of no more than 160,000 AF of groundwater each year within its five mile zone.

Groundwater is a significant source of water supply in the Yuma Groundwater Basin and is important from the public health and environmental perspectives. The growing populations in the areas of the Yuma Basin are becoming more dependent on this resource for domestic and irrigation uses. The groundwater in the Yuma Groundwater Basin is of lower quality than the surface water of the Colorado River because of leaching of soil and subsoil saline materials, fertilizers and soil amendments. Constituents found in the groundwater include Total Dissolved Solids (TDS), chlorides and sulfates, which cause water to have an unpleasant taste and/or odor. As a result, many domestic residences served by this groundwater have treated water delivered to their homes or have a reverse osmosis filtration system for supplemental household purposes such as drinking and cooking. Leaking cesspools and overloaded septic systems have the potential to contaminate groundwater with human pathogens, creating a health risk for users of the groundwater.

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<sup>4</sup> South Yuma County, Somerton/Gadsden/San Luis Development Study Areas, Background Studies & Community Assessments; Yuma County Department of Development Services, October, 2000.

<sup>5</sup> Personal Interview. J.A. Deere, Deere & Son Well Drilling, May '2000. South Yuma County, Somerton/Gadsden/San Luis Development Study Areas & Community Assessments, October 2000.

<sup>6</sup> [www.usbr.gov/ColoradoRiverBasin/SalinityControlAct/ProtectiveandRegulatoryPumpingUnit/](http://www.usbr.gov/ColoradoRiverBasin/SalinityControlAct/ProtectiveandRegulatoryPumpingUnit/)

### Environmental Consequences

With the implementation of the No Action Alternative the potential for contamination of the groundwater would continue. Activities associated with the proposed improvements to the on-site treatment systems would not occur. Untreated wastewater infiltrating from the failing units could increase if additional residents do not maintain their units and continue to discharge wastewater into failing septic systems and leaking cesspools. In the long-term, adverse impacts to groundwater would occur because of contaminant infiltration from cesspools and septic systems. Negative long-term impacts to groundwater quality are expected with the implementation of the No Action Alternative.

Under Alternative B there would be no change in quantity of infiltration into groundwater in the Gadsden area, but in both the short and long term, inflow quality would be improved, at least as long as rehabilitated systems continued to function properly.

Alternative C would have a positive impact in the short and long-term for groundwater quality, but negatively impact the quantity in a manner similar to Alternatives D and E below.

Implementation of Alternatives D and E would result in short-term and long-term direct/indirect positive impacts to the quality of the groundwater. However, the quantity of infiltration will be diminished, at least in the area around Gadsden. This reduction of infiltrating wastewaters will have the negative impact of diminishing the volume of subsurface reserves but will have the positive impact of helping to lower a high water table. In either case, the impact will be very minor in comparison to the volumes of water presently being pumped out of the ground to lower the water table. In the short-term, the proposed construction of the wastewater collection system would lessen the potential for infiltration of wastewater into the aquifer by replacing of the failing septic units and leaking cesspools. In the long-term, possible contamination of groundwater currently used to supply drinking water could be avoided with the implementation of the action alternatives.

Under Alternatives D and E there is the potential for minor transboundary impacts to the groundwater with the slight increase in flow to the Wellton-Mohawk Salinity Canal. In terms of groundwater the impact of the transfer of infiltrating waters from Gadsden to south of the U.S. Mexican border would be minor, because it would constitute an extremely small part of the water being pulled from the ground in the area, and positive, because the waters will be treated before passing across the border and infiltration.

### **3.1.2 SOILS AND LAND USE**

#### Environmental Consequences

Under the No Action Alternative adverse impacts to soil from improperly maintained or leaking on-site treatment systems will continue, and may increase in the future with the possibility of more failing systems.

However, there is no anticipated adverse impact to soil or land use for any of the other alternatives, because these activities would occur only in urban areas and along the highway right-of-way, or in areas that have been previously been used for agricultural production where these resources have already been disturbed. Soils obtained from construction activities (trenching, grading activities, cut and fill) would be utilized to fill up the trenches. Any adverse effects to land use would be temporary and insignificant.

Implementation of the action alternatives would not be expected to promote significant conversion of farmland to other uses, because the proposed force main will not carry the capacity for additional hookups of any considerable volume. Area development has been mostly limited to the regions east of San Luis and is not expected to move into the project's area of concern.

There are no expected transboundary impacts to soils or land use from any of the alternatives.

## **3.2 BIOLOGICAL ENVIRONMENT**

The biological environment includes the biotic or living components of the ecosystem present within the project area. Biotic components include vegetation; special aquatic sites such as wetlands; wildlife; and threatened, endangered or other special status species. The affected environment and environmental consequences for each of these components are described below.

### **3.2.1 Vegetation and Wetlands**

#### Affected Environment

The area of concern is located within the arid Lower Colorado River Valley Subdivision of the Sonoran Desert. Because of the combination of high temperature and low precipitation, this subdivision is the driest of the Sonoran Desert subdivisions. Native plant growth is typically open and simple, with wide spaces between plants reflecting the intense competition for scarce water resources. Creosote Bush (*Larrea tridentata*) is characteristic shrub species in the subdivision. Honey mesquite (*Prosopis glandulosa* var. *torreyana*), Palo Verde (*Cercidium floridum*) and Ironwood trees (*Olneya tesota*) are typical tree species in natural and man-made drainages. Sand dunes are characteristic features of some undeveloped areas. However, for most of the right-of-way (ROW) length, the adjacent landscape is characterized by active cultivation on irrigated lands, which has eliminated the natural vegetation.

#### Environmental Consequences

Vegetation communities would not be impacted with the implementation of the No Action Alternative because the construction activities associated with the proposed wastewater collection system improvements would not occur. Operation of the existing

on-site systems would remain the same. Direct/indirect long-term impacts would not occur on vegetation with the implementation of the No Action Alternative.

The primary direct effect of the other alternatives, including the proposed action alternative would be the potential temporary loss of vegetation. The vegetation communities near the proposed construction of the wastewater collection system would not be impacted due to the fact that all the construction and operation activities would occur on previously disturbed urban land areas. The replacement of the on-site systems would occur at sites that are currently in use. It is estimated that a very small area would be impacted by vehicle equipment during the replacement of these systems. Long-term direct/indirect impacts to vegetation communities are not likely with the implementation of the other alternatives.

### **3.2.2 WILDLIFE**

#### Affected Environment

Some of the more common species known to exist within riparian habitat along the lower Colorado River include Abert's towhees (*Pipilo averti*), vermilion flycatchers (*Pyrocephalus rubinus*) and brown-crested flycatchers (*Myiarchus tyrannulus*), summer tanagers (*Piranga rubra*), Bell's vireos (*Vireo vellii*), yellow-breasted chats (*Icteria virens*), and northern orioles (*Icterus galbula*), all of which are summer residents. Cavity dwellers also found here include northern flickers (*Colaptes auratus*), ladder-backed woodpeckers (*Picoides scalaris*) and Gila woodpeckers (*Melanerpes uropygialis*). White-winged doves (*Zenaida asiatica*), mourning doves (*Zenaida macroura*), and Gambel's quails (*Callipepla gambelii*) utilize screwbean and mesquite habitat. Birds associated with marsh habitat that may be found in the region include least bitterns (*Ixobrychus exilis*), American bitterns (*Boraurus lentiginosus*), Virginia rails (*Rallus limicola*), Sora rails (*Porzana Carolina*), long-billed marsh wrens (*Telmatodytes palustris*), yellowthroats (*Geothlypis trichas*), white-faced ibis (*Plegadis chihi*), great blue herons (*Ardea herodias*), and great egrets (*Casmerodius albus*).

The few large mammals existing in the area of concern include coyotes (*Canis latrans*), rabbits (*Sylvilagus and Lepus spp*), squirrels (*Citellus spp*, and *Ammospermophilus spp*), striped skunks (*Mephitis mephitis*) and bobcats (*Felis rufus*). The subdivision's sandy plains may host large populations of burrowing rodents including the Round-tailed Ground Squirrel (*Spermophilus tereticaudus*) as well as various mice and rat species, beaver (*Castor Canadensis*), and muskrat (*Ondatra zibethica*) (Anderson and Ohmart 1982, Ohmart et al. 1988). Most of the mammals that do exist have adapted to high daytime temperatures by remaining underground or estivating during the hottest months.

Limited information exists for reptiles and amphibians found in the lower Colorado River regions. Fifty-five species of reptiles and amphibians have been documented from the lower Colorado River area as of 1988, several of which were non-native introductions (Ohmart and Anderson 1988). However, there are a number of unique sand-adapted lizards and snakes generally found only in this subdivision. Some of the many notable



species found in the project area are fringed-toed lizards (*Uma inornata*, *U. notata*), the Sidewinder (*Crotalus cerastes*), Banded Sand Snake (*Chilomeniscus cintus*) and Western Whiptail (*Cnemidophorus tigris tigris*). Most reptiles and amphibians, including the desert tortoise (*Gopherus agassizii*) which is the only reptile species listed as threatened (T) and/or as having a similarity of appearance to a threatened taxon (SAT,T) that could occur in the general area, either prefer riparian/aquatic type habitats, or upland sites that are typically more arid.

### Environmental Consequences

Under the No Action Alternative, wildlife communities in the area of concern would not be directly or indirectly affected because construction would not occur. Operation of the existing on-site systems would remain the same. Direct/indirect long-term impacts would not occur on wildlife with the implementation of the No Action Alternative.

The primary direct effect of the other action alternatives to wildlife communities would be the potential loss of wildlife habitat during construction and operation activities. Wildlife communities in the project area would not be significantly affected by habitat loss because construction of the wastewater collection, conveyance and treatment systems would occur in areas that are previously disturbed. The replacement of existing wastewater disposal units would occur at sites and properties that are currently in use, thus avoiding additional disturbance of wildlife habitat. During the construction activities associated with the implementation of these alternatives, some mobile animals would escape to areas of similar habitat other sedentary animals which utilize burrows (amphibians, lizards, and small mammals) could be lost. Long-term and short-term direct/indirect impacts to wildlife communities with the implementation of the action alternatives would not be significant.

### **3.2.3 THREATENED AND ENDANGERED SPECIES**

#### Affected Environment

A list of special status species (Federally Threatened or Endangered, or State Threatened or Endangered), which may occur within the area of concern, was requested from the U.S. Fish & Wildlife Service and the Arizona Game & Fish Department. The U.S. Fish and Wildlife Service indicated that the Yuma clapper rail (*Rallus longirostris yumanensis*) – (Endangered), the Flat-tailed horned lizard (*Phrynosoma mcallii*) – (Proposed Threatened), and the Southwestern willow flycatcher (*Empidonax traillii extimus*) - (Endangered), may occur in the project area.

The Endangered bird species may occasionally utilize some of the canals adjacent to the area of concern for a portion of their food supply, but are most likely to prefer the immediate Colorado River area, which is within 0.4 km (0.25 miles) of the proposed right-of-way (ROW) at one location near Gadsden. In any case, there is no anticipation of impacts to the adjacent canals by the proposed project. The Flat-tailed lizard is generally

found in dry, wind-blown, native soils associated with creosote stands on the Yuma Mesa, which is located eastwards, outside of the area of concern.

Other special status species are listed for Yuma County, however, their habitat is located outside the area of concern defined for the proposed action. These include: the Bald eagle (*Haliaeetus leucocephalus*) – (Threatened), the Cactus ferruginous pigmy-owl (*Glaucidium brasilianum cactorum*) – (Endangered), the California brown pelican (*Pelecanus occidentalis californicus*) – (Endangered), the Razorback sucker (*Xyrauchen texanus*) – (Endangered), the Sonoran pronghorn (*Antilocapra Americana sonoriensis*) – (Endangered), the Mountain plover (*Charadrius montanus*) – (Proposed Threatened), and the Peirson's milkvetch (*Astragalus magdalenae* var. *peirsoni*) – (Threatened), a stout perennial of short duration, which habitat is located at the low dunes of the Yuma desert.

The Southwestern willow flycatcher is a neotropical migrant that was listed as endangered in 1995 (USFWS 1997). Breeding range includes southern California (from the Santa Ynez River south), Arizona, New Mexico, extreme southern portions of Nevada and Utah, extreme southwest Colorado, and western Texas. Records of probable breeding pairs in Mexico are rare, restricted to extreme northern Baja California and Sonora. Southwestern willow flycatchers typically nest in riparian habitat characterized by dense intermediate sized shrubs or trees, such as willows, buttonbush (*Cephalanthus spp.*), box elder (*Acer negundo*), often with an overstory of scattered large trees such as cottonwoods or willows. The loss of preferred habitat along the lower Colorado River is likely responsible for observations of southwestern willow flycatchers using saltcedar for nesting substrate (USBR 1996). In addition, high rates of brood parasitism on southwestern flycatchers by cowbirds (*Molothrus ater*), has been documented (USFWS 1997). Almost all Southwestern Willow Flycatcher breeding habitats are within close proximity (less than 20 yards) of water or very saturated soil. This water may be in the form of large rivers, smaller streams, springs, or marshes. At some sites, surface water is present early in the nesting season, but gradually dries up as the season progresses. Ultimately, the breeding site must have a water table high enough to support riparian vegetation. The Southwestern willow flycatcher begins arriving at potential breeding sites as early as late April, and may continue to be present until August.

The Yuma clapper rail was listed as endangered in 1967, and is one of seven North American subspecies of the clapper rail, a hen-like marsh bird. The Yuma subspecies is gray-brown with a tawny breast, a white throat and under-tail, and bars across its flanks. The Yuma clapper rail is a large bird, measuring 36 to 42 centimeters (14 to 16 in) in length. They are found in western Arizona along the Colorado River from Topock Marsh (part of the Havasu National Wildlife Refuge Near Needles, California), south to Gulf of California in Mexico, including the lower Bill Williams and Gila River drainages. They have also been found near the Salton Sea (CA), Picacho Reservoir south of Phoenix Arizona, and at the Salt River/Verde River confluence east of Phoenix. It has been suggested that Yuma clapper rail may not have existed in the US along the lower Colorado River area until larger marshes were formed following dam construction (USFWS 1997). The largest population of Yuma clapper rails exists in the delta area

(Cienega de Santa Clara) of the Colorado River in Mexico. Yuma clapper rails feed on crayfish, fishes, frogs, clams, spiders, grasshoppers, crickets, dragonflies, aquatic plant seeds, bird eggs, and crustaceans. In the United States, the Yuma clapper rail seeks out nesting sites among tall cattails and bulrushes along the margins of the shallow stable ponds of freshwater marshes. They often prefer freshwater and brackish (mixed fresh and salt-water) marshes with dense cattails, bulrushes, and other aquatic vegetation. Yuma clapper rail establishes breeding territories around March-April and builds nests in nearby vegetation, and are often highly territorial during breeding. The birds remain on their US breeding grounds from mid-April to mid-September, when they migrate south to Mexico for the winter. It is thought that the bird lays about six eggs in the nests, which are constructed on dry hammocks or in small shrubs amid dense cattails, just above water level. Reasons for their decline include primarily human-related modifications of wetland habitat, such as channelization, bank stabilization, and water impoundments (Matthews 1990). Some backwaters were eliminated, but the dams created much new habitat for the birds by allowing sedimentation, which in turn allowed cattail and bulrush marshes to emerge. However, other suitable rail habitat has been lost through dredging and channelization projects along the Colorado River. In addition, there is significant amount of habitat near the Salton Sea; however, much of the habitats are artificially maintained marshes (Bob Henry, AGFD personal communication).

The Yellow-billed cuckoo (*Coccyzus americanus*) – (Candidate), is a summer resident in Arizona (Corman 2000) occurring along the lower Colorado River as well as elsewhere in Arizona. Although not currently listed as threatened or endangered, the Yellow-billed cuckoo is at a critically low population level, not only in California, but also in the northern Rocky Mountains, the Great Basin, and the Pacific Northwest (Gaines and Laymon 1984). It is associated with floodplain forests of dense cottonwood-willow or mesquite (Corman 2000). Populations are in decline primarily due to habitats loss, modification, and fragmentation (Franzreb 1987, Laymon and Halterman 1989, Hughes 1999); decreased water tables (Phillips et al. 1964); and possibly the use of pesticides (Gaines and Laymon 1984, Laymon and Halterman 1986, Rosenberg et al. 1991, Hughes 1999) (Corman 2000). Loss or modification of these riparian habitats along the lower Colorado River is approaching 100% (Mac et al. 1998), which would have an effect on the numbers and nesting of yellow-billed cuckoo. The Yellow-billed cuckoo arrives on its breeding grounds in mid-to late May and nests from early June through August and frequently into September, with the peak occurring in mid-July and early August (Hamilton and Hamilton 1965). In Arizona, the earliest egg date reported is 15 June (Corman 2000). Most cuckoo have probably left Arizona by mid-October (Corman personal communication). The majority of yellow-billed cuckoo nests have been located in willows and to a lesser extent in Fremont cottonwoods (Hamilton and Hamilton 1965). Nests have also been found in Arizona alder (*Alnus oblongifolia*), tamarisk (*Tamarix spp.*), sycamore (*Plantanus wrightii*), and velvet ash (*Fraxinus pennsylvanica velutina*) (Corman 2000). Of importance to nesting success is dense shade. Yellow-billed cuckoos nest an average of 5.2 m above ground (Corman 2000). In the lower Colorado River midsummer temperatures are often over 43°C, and such temperatures would kill embryos within one hour of unprotected exposure. The removal of cottonwood and willow stands forming canopy heights above 15 m and replacing it with tamarisk (rarely over 7.5 m)

decreases the amelioration of solar radiation, ambient temperatures (Hunter 1987), and possibly relative humidity around nests.

### Environmental Consequences

Under the No Action Alternative endangered and threatened species, species of concern, and sensitive species would not be directly affected in the project area because construction associated with the proposed action would not occur and operations of the on-site treatment systems would not change. Direct/indirect long-term impacts would not occur to threatened and endangered species and their habitats with the implementation of the No Action Alternative.

For Alternatives B, C, D and E, endangered species, threatened species, species of concern, sensitive species, special category (plant) species, and sensitive/critical habitat would not be directly impacted because activities associated with these alternatives would occur only in urban areas previously disturbed. Long-term and short-term direct/indirect adverse impacts to endangered species would not be anticipated under any of the action alternatives.

None of the alternatives would be expected to generate adverse transboundary impacts to threatened and endangered species in Mexico, but additional discharge into the Wellton-Mohawk Canal and consequent flow into the Santa Clara wetlands under alternatives D and E should prove beneficial to those species that utilize the wetlands.

## **3.3 CULTURAL RESOURCES**

### Affected Environment

Cultural resources are any prehistoric or historic district, site, or building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. They include archaeological resources (both prehistoric and historic), historic architectural resources, and traditional cultural resources. Only significant cultural resources (as defined in 36 CFR 60.4) are considered for potential adverse impacts from an action. Significant archaeological and architectural resources are either eligible for listing, or listed on, the National Registry of Historic Places (NRHP). Significant traditional cultural resources are identified by Indian tribes or other groups, and may also be eligible for the NRHP. Seven tribes with cultural affiliation in southern Arizona were consulted and provided information on known prehistoric and historic sites located in the project area as well as proposed actions to be taken.

Two cultural sites were recorded within the area of concern, as archaeological remains of two commercial structures in Gadsden, which includes a Bank and a Drug Store site<sup>7</sup>. Both sites are either individually or contributing properties to a historic district, eligible for inclusion on the National Register of Historic Places under criteria “a” and “c”, as established in Title 36 of CFR 60.4. The regulations state that resources are eligible that,

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<sup>7</sup> Logan, Simpson & Dye; US 95 – San Luis to 32<sup>nd</sup> Street Yuma County, Arizona, February 1997.

“possess integrity of location, design, setting, materials, workmanship, feeling and association, and

- a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
- b) that are associated with the lives of persons significant in our past; or
- c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant distinguishable entity whose components may lack individual distinction, or
- d) that have yielded or may likely yield information important in history or prehistory”.

None of these features within the area of concern would be impacted by the implementation of any of the alternatives.

No other cultural features or deposits are registered or were identified within the area of concern<sup>8</sup>. Consultation with the State Historic Preservation Officer (SHPO) has resulted in a determination of no adverse effect as a result of the proposed action.

#### Environmental Consequences

No construction activities that have the potential to disturb surface/subsurface cultural resources, would occur with the implementation of the No Action Alternative. As a result, cultural resources would not be affected with the selection of the No Action Alternative.

Under all of the action alternatives, proposed construction areas would be located within the existing on-site system, the community or the U.S. Highway 95 right-of-way and would not impact any of the listed sites. All construction will be limited to previously disturbed areas. In accordance with Section 106 of the National Historic and Preservation Act of 1966, as amended through 2000, if previously unidentified cultural resources are discovered during construction, the contractor will stop work immediately at that location and take all reasonable steps to secure the preservation of those features and the State Historic Preservation Officer (SHPO) will be notified. SHPO will, in turn, notify the appropriate agency(ies), when needed, to evaluate the significance of the resource.

### **3.4 HAZARDOUS AND SOLID WASTE**

#### Affected Environment

A preliminary Initial Site Assessment (PISA) was conducted in May 1994 for the presence of hazardous materials within the limits of the area of concern<sup>9</sup>. The assessment

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<sup>8</sup> Archaeological Research Services, Inc. And Gerald A. Doyle & Associates; US 95 – San Luis to 32<sup>nd</sup> Street, Yuma Cultural Resources Surveys, June-August 1996.

<sup>9</sup> Logan, Simpson & Dye; US 95 – San Luis to 32<sup>nd</sup> Street Yuma County, Arizona, February 1997.

included a field reconnaissance, review of applicable federal and state agency records and a review of aerial photographs. Records reviewed for the project included the EPA Toxic Release Inventory System list, the Superfund Amendments and Reauthorization Act (SARA) list, the Federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) list, the RCRA database, Arizona Department of Environmental Quality (ADEQ) Arizona CERCLA information and data system (ACIDS) list, the Arizona Water Quality Assurance Revolving Fund (WQARF) project priority list, ADEQ Drywell Registration list, the ADEQ Hazardous Materials Incident Logbook, the Arizona Directory of Closed Waste Landfills and Closed Solid Waste Dumps, the Arizona Directory of Public Municipal Solid Waste and Rubbish Landfills, and the ADEQ Leaking Underground Storage Tank (LUST) and Underground Storage Tank (UST) list.

Within the area of concern the field survey indicated potential locations of hazardous materials associated with sites of former gas stations in Gadsden, a farm equipment storage yard in Gadsden and materials storage in San Luis. No evidence of hazardous materials was discovered for these locations in the agency records search<sup>10</sup>. An Initial Site Assessment (ISA) would need to be conducted prior to design and construction to confirm or deny the presence of hazardous materials at the area of concern.

No other hazardous materials are suspected in the area of concern as a result of the investigation<sup>11</sup>. If previously unidentified or suspect hazardous materials are encountered during construction activities due to the implementation of the proposed action, work will stop at that location and the ADEQ will be contacted. Such locations will be investigated and proper action implemented prior to the continuation of work in the area of concern.

### Environmental Consequences

Construction activities that have the potential to disturb surface/subsurface soils and the potential occurrence of hazardous materials would not occur with the implementation of the No Action Alternative. As a result, any hazardous materials that may be present would not be affected with the selection of the No Action Alternative.

Hazardous materials used during construction of the wastewater collection system would be limited to oil lubricants, sealers and paints. Spent containers would be removed from the site and disposed properly. No impacts of hazardous materials or generation of waste would occur due to construction of any of the action alternatives.

Implementation of Alternatives C, D and E would create or increase the need for solid waste disposal. Under Alternative C, the sludge that is created would be treated in situ anaerobically and would be disposed of in a landfill, or left on site after the end of the pond's lifetime, approximately 20 years. The increase of solid waste that would occur under Alternatives D and E will have a minor impact on the processing facilities at the San Luis wastewater treatment plant, which will be expanded with this increase in mind. The sludge would be treated in aerobic digesters, dewatered in a dissolved air flotation

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<sup>10</sup> Logan, Simpson & Dye; US 95 – San Luis to 32<sup>nd</sup> Street Yuma County, Arizona, February 1997

<sup>11</sup> Logan, Simpson & Dye; US 95 – San Luis to 32<sup>nd</sup> Street Yuma County, Arizona, February 1997

system and then, having met standards for such application, would be applied to alfalfa fields in the area, or disposed of in a landfill.

None of the Alternatives is expected to generate transboundary impacts related to hazardous or solid wastes in Mexico.

### **3.5 ENERGY AND NATURAL RESOURCES**

#### Affected Environment

Gadsden purchases electricity from Arizona Public Service. The electricity distribution system appears adequate for the community's needs, as no evidence of brownouts or other forms of power shortages has been noted. Gadsden is not served by a natural gas provider.

Water and sunlight are the only natural resources consumed in significant quantities by Gadsden. Water supply and use are discussed in the Surface Water and Groundwater sections of this EA.

#### Environmental Consequences

None of the Alternatives are expected to impose significant impacts on energy supplies or natural resources. Alternatives C, D and E would include a pumping station which would impose a moderate increase on electricity usage. Alternatives C, D and E would accommodate a population increase up to 30%, which if it were to occur would place additional but not significant demands on energy resources.

### **3.6 NOISE**

#### Affected Environment

Noise is one of the major concerns associated with construction-related activities. Noise is commonly classified as 1) general audible noise in the range heard by humans 2) special noise such as sonic booms or artillery blasts that have a sound pressure of shock component, and 3) noise-induced vibration (e.g., from sonic booms and artillery blasts) which may involve noise levels that can cause physical movement and damage to natural and man-made structures.

Audible noise produced within the urban zone of Gadsden-San Luis during the wastewater system construction activities would result in some localized short-term impacts in Gadsden. Normal urban noise levels range from approximately 55-80 decibels. Noise during construction would be expected to range from 65-95 decibels.

Daily average-day-night noise level is the primary measure used for describing noise effects on communities. The daily-average day-night noise level during construction would only be slightly less than the loudest noise during the day since the loudest noise

event controls the 24-hour average (Wyle 1992). Although temporary community annoyance may occur, construction would be finished in a short time period and the community would not be significantly affected by construction related noise. Average day-night noise levels in San Luis would not be expected to increase significantly because of the distance between the northern residential areas in San Luis and the southern residential areas in Gadsden. Existing background noise levels in Gadsden are probably affected by the following sources: wind, traffic, occasional construction activities, and other common noises of a small community.

### Environmental Consequences

None of the alternatives is expected to impose significant long-term impacts on the project area. Background noise levels may be elevated during construction activities associated with Alternatives B, C, D and E. Construction noises tend to be short in duration and concentrated around the immediate work area. Construction related noise will be mitigated through the use of standard procedures such as specific, weekday hours of operation and the use of mufflers on construction equipment.

None of the alternatives is expected to generate transboundary noise impacts in Mexico.

## **3.7 PUBLIC HEALTH AND SAFETY**

### Affected Environment

Bacterial, viral and parasitic infections associated with discharges of raw sewage in the community, either from failing septic systems or open cesspools are a current health concern in Gadsden. Untreated wastewater has the potential to support a variety of microscopic and submicroscopic organisms that can cause infectious disease. Among the most common organisms found in untreated wastewater are *E. coli* (*Escherichia coli*), cholera (*Vibrio cholerae*), hepatitis A (*Enterovirus ssp*), Giardia (*Giardia lamblia*), Cryptosporidium (*Cryptosporidium parvum*), and helminth eggs. People can become ill by drinking water contaminated with these organisms, by eating raw or undercooked foods that have been in contact with contaminated water, and by poor personal hygiene that allows the spread of diseases either directly or indirectly through inter-human contact.<sup>12</sup> The Yuma County Health Department and the University of Arizona Cooperative Extension Program provide public education programs on public disease prevention and control, offer immunization programs and give referrals for communicable and non-communicable disease and vector control.

The past few years have shown an increase in *Valley Fever* cases within the County as a result of inhaling desert fugitive dust. The tilling of soil by agricultural cultivation practices or housing development increases the probability and risk of contracting the disease. Best Management Practices being implemented attempt to help control outbreaks. Moreover, *mosquitos* breeding in wetlands and marshes in all areas of the County have recently become a concern as outbreaks of Dengue Fever and Encephalitis

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<sup>12</sup>Geo-Marine, Inc. Ojinaga Wastewater Improvements Systems, Environmental Assessment, May '2002.



have been increasing throughout the State.<sup>13</sup> To address these issues, the Arizona Department of Agriculture has established several programs such as: an integrated pest management program to manage insects, rodents, nematodes, weeds and diseases; educational programs for the public and agricultural community; integrated crop management and cultural practice workshops; field scouting, economic thresholds and chemical and biological control to reduce the use of various chemicals.<sup>14</sup>

### Environmental Consequences

The health risk for waterborne disease in the area of concern would continue at current levels or could increase with implementation of the No Action Alternative. In the long-term, waterborne disease outbreaks could increase in the area of concern because of the expected increase in population and the lack of an efficient wastewater collection system. Because on-site treatment systems may not be properly maintained over time, implementation of the No-Action Alternative could result in a potential long-term negative indirect impact to public health in the area of concern.

Implementation of any of the action alternatives would likely decrease the health risk in the area of concern resulting in short-term and long-term positive impacts to public health. Untreated wastewater supports a variety of organisms that can cause infectious diseases. Potentially contaminated groundwater resulting from the leakage and infiltration from the on-site treatment systems would be alleviated with the implementation of these alternatives. The interactive populations would also be less likely to be victimized by waterborne communicable diseases resulting from exposure to contaminated groundwater used as potable water. Short and long-term negative impacts would not occur to the public health in the area of concern with the implementation of the preferred action or any of the other action alternatives.

All of the action alternatives would have a minor positive impact on the public health of Mexico by lessening the infiltration of potentially contaminated waters into the underlying strata, and by alleviating the cross border communication of water borne pathogens carried from the United States by visitors and day laborers.

## **3.8 POPULATION AND ECONOMICS**

### Affected Environment

The community of Gadsden was established in the early 1900's and was at one time a thriving community. Over time, most of the area's growth migrated to the City of Yuma where trade and commerce activities were established with the crossing of the Colorado River.

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<sup>13</sup> Archivo 5 ref

<sup>14</sup> ADA

Today, Gadsden is a small, unincorporated community of 953 residents, mainly farm workers, and 236 households.<sup>15</sup> Commercial buildings consist of a post office, a small store, a used household appliance store, a used farm equipment storage yard, an elementary school, a volunteer fire station and a community park.<sup>16</sup> The nearest industrial building is located 1½ miles south. Gadsden is approximately five (5) miles north of the City of San Luis. Part of the proposed action is to connect to their wastewater treatment facility.

A door-to-door special survey was conducted recently in accordance with the U.S. Department of Housing and Urban Development (HUD)<sup>17</sup> income survey guidelines. It showed a 78% low to moderate income in the community with average household size of 4.

### Environmental Consequences

With the implementation of the No Action Alternative, the number of jobs and the total workforce in the area would remain about the same. Therefore, no impact on local employment in the area of concern would occur with selection of the No Action Alternative.

Demand for housing and vacancy rate would not be expected to change in the short-term with the implementation of the No Action Alternative.

Under the implementation of the action alternatives the number of temporary jobs that the project would generate is relatively low, and it is unlikely that a significant number of workers would relocate to the region as a result of the project. Therefore, it is not expected that there would be short-term direct/indirect socio-economic impact in the region with the implementation of any of the alternatives. In the long term, the total number of permanent jobs directly related to project construction and maintenance that would be created would be small. Six to eight workers would be required, representing 0.7% percent of the total workforce in the area. Therefore, the effect of construction and maintenance of the action alternative on local employment would be less than significant. The wastewater collection system improvements may make the area a more desirable place to live, which could result in a slight increase in population, but this amount would likely be less than significant.

In any case, the labor supply in the area is sufficient so those construction workers would not need to relocate from outside the area to construct the project. Because it is likely that most, if not all, construction workers would be local residents, demand for housing is not expected to change as a result of the implementation of the preferred action alternative and the housing vacancy rate would not be affected. Long and short-term direct/indirect impacts on housing in the region, are not expected to be significant.

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<sup>15</sup> U.S. Census Bureau, Census 2000.

<sup>16</sup> Yuma County, Arizona; Department of Development Services, Letter from Miss Nancy Ngai, Community Planning Coordinator, June 13, 2002.

<sup>17</sup> Survey Tabulation Form (HUD), Gadsden, Arizona, May 14, 2002.

Implementation of any of the action alternatives would likely lead to increased utility costs. The community would ensure that costs are equitably distributed among wastewater users, thereby minimizing the potential for significant adverse impacts to any specific user groups. Higher utility costs and impact fees would be phased in over a period of time to spread out the utility fee increases and prevent a substantial immediate jump that could adversely affect certain users. Although increased utility costs would to some extent affect residents and businesses in Gadsden, these costs would not create a significant adverse financial burden.

None of the alternatives is expected to impact population and economics in Mexico.

### **3.9 ENVIRONMENTAL JUSTICE**

#### Affected Environment

A baseline environmental justice (EJ) screening process was used to identify minority or low-income communities within the Project Area. Preliminary screening for potential EJ issues is based on two general statistics. First, the screening process is used to ascertain whether the minority population percentage in the affected area is either greater than 50 percent or meaningfully greater than the minority population percentage in the general population (EPA 1997b). The concept of race as used by the Census Bureau reflects self-identification and self-classification by people according to the race with which they most closely identify (U.S. Census Bureau 2000). Second, low-income populations are identified using either Department of Health and Human Services (HHS) poverty guidelines or the Department of Housing and Urban Development (HUD) statutory definition of very low-income for the purposes of housing benefits (EPA 1997b). The percentage of impoverished people in the affected area is compared with the percentage of people living below the poverty limit in the general population to determine if a significant difference exists. Minority and impoverished population totals and percentages estimated from 2000 U.S. Census data are presented in Table 12 (U.S. Census Bureau 2000).

**Table 12. Minority and Impoverished Population Totals and Percentages for Gadsden, Yuma County, and the state of Arizona, 2000**

	<b>Gadsden</b>	<b>Yuma County</b>	<b>State of Arizona</b>
<b>Total Population</b>	953 (100%)	160,026 (100%)	5,130,632 (100%)
<b>White</b>	390 (41%)	109,269 (68%)	3,873,611 (75.5%)
<b>Black</b>	-0- (0%)	3,550 (2.2%)	158,879 (3%)
<b>American Indian, Eskimo, or Aleut</b>	34 (3.5%)	2,626 (1.6%)	255,879 (5%)
<b>Asian or Pacific Islander</b>	5 (<1%)	1,683 (1%)	98,969 (2%)
<b>Other race</b>	511 (54%)	37,743 (23.5%)	596,774 (12%)
<b>Percentage with Income below poverty level *</b>	(45%)	(20%)	(15%)

SOURCE: 2000 U.S. Census Data

\* 1990 U.S. Census Data

Gadsden's population comprises significantly higher percentages of impoverished and minority populations than both Yuma County and Arizona as a whole (Table 12). Table 12 shows that 45 percent of the Gadsden population lives below the poverty level, compared with 20 and 15 percent for Yuma County and Arizona, respectively. Fifty-four percent of Gadsden's population classified themselves as "other race," more than double that of the county and nearly five times that of the state. The other race classification includes all other persons not included in the "White," "Black," "American Indian, Eskimo, or Aleut," and the "Asian or Pacific Islander" race categories. Based on EPA's EJ criteria described above, the potential for EJ issues should be analyzed in conjunction with projects in the Gadsden area.

### Environmental Consequences

All of the action alternatives would positively benefit minorities and low-income persons either by providing upgrades to their current on-site treatment systems or by providing sewer connections to households that previously utilized septic systems. Provision of these services is expected to increase the standard of living in the Project Area. The No Action Alternative is a continuation of current practices in which individuals must install and maintain potentially inadequate on-site treatment systems. This can adversely impact low-income populations because septic systems may be failing because individuals do not have enough income to properly maintain these systems.

Failing septic systems present possible health risks to minority and low-income populations. These impacts may fall disproportionately on minority and low-income residents of the project area, based on the baseline EJ screening process. The action

alternatives, and alternatives C, D and E in particular would likely have a beneficial impact in the short and long term on environmental justice issues.

None of the alternatives would be expected to generate adverse transboundary impacts to environmental justice in Mexico.

### **3.10 CUMULATIVE EFFECTS**

Cumulative impacts result when an incremental impact associated with an action is considered additively with impact of past, present, and reasonably foreseeable actions, regardless of what agency or person undertakes such other actions (40 CFR 1508.7).

Cumulative impacts may result from individually *minor* but collectively *significant* actions that occur within the same temporal and spatial context. In addition to the proposed project, the other known action of concern is the expansion of the San Luis wastewater treatment plant. The role alternatives D and E will play in the expansion of the San Luis wastewater treatment plant will not contribute a significant cumulative impact to San Luis and surrounding areas. The San Luis facility is currently overloaded, and expansion will cover current needs with accommodation for slight growth in the future.

The cumulative impacts of the proposed project and the San Luis wastewater treatment plant expansion will not be significant.

### **3.11 CONCLUSION**

The National Environmental Policy Act (NEPA) guidance suggests that the evaluation of an action alternative should include consideration of means to reduce, or mitigate, adverse environmental impacts. Mitigation measures are identified to ensure that an action does not create any significant adverse effects.

Potential negative or adverse effects associated with the implementation of the action alternatives could be minimized through the implementation of appropriate practices and technologies. Construction activities would be conducted in a manner sensitive to potential environmental impacts. Generation of dust and PM<sub>10</sub> emissions would be minimized using appropriate and accepted methods. Construction traffic would be minimal, and controlled access to the construction site would reduce the potential for adverse effects to transportation resources. Construction activities would be limited to normal weekday working hours to minimize the potential effects to local residents associated with construction noise.

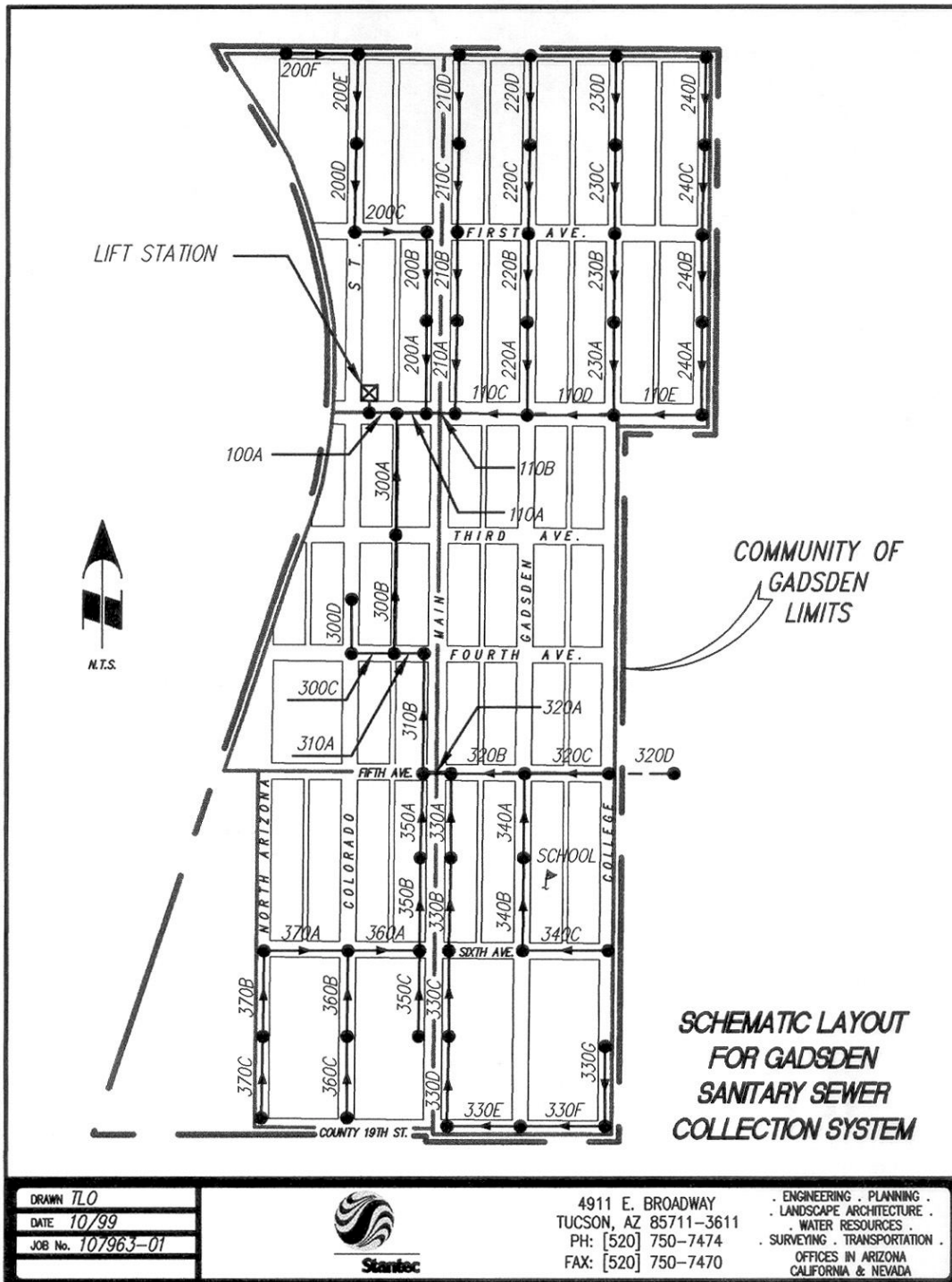
The following positive effects would be realized by implementing the preferred action alternative:

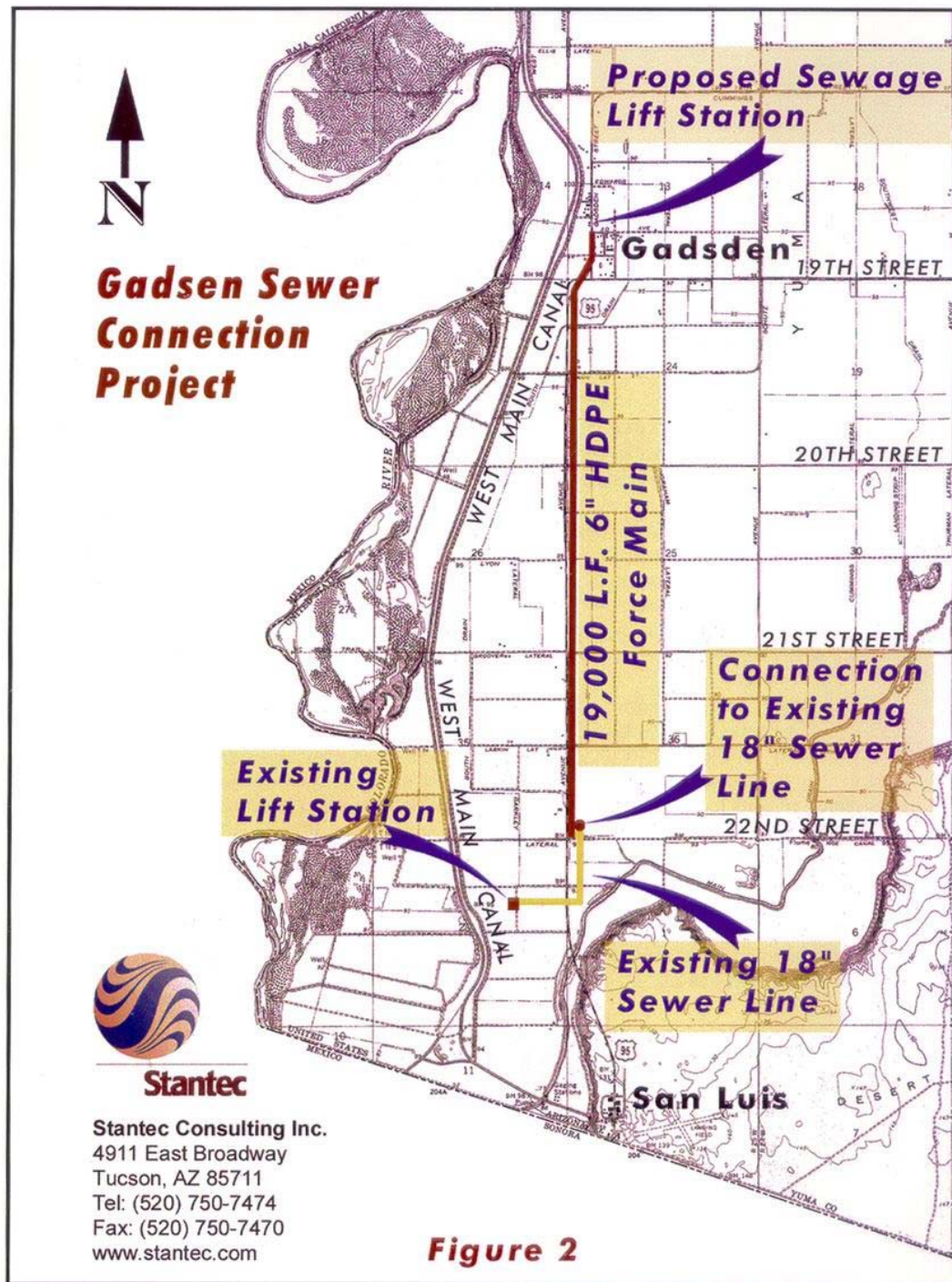
- Elimination of leakage and infiltration of untreated wastewater from the failing septic tanks and cesspools into the groundwater table;

- Reduction of human pathogens in surface waters and concomitant reduction in community health risk;
- Reduction of offensive odors.

Therefore, this EA, prepared by the EPA in compliance with the NEPA, after considering a wide range of regulatory, environmental (both natural and human) and socio-economic factors, has identified no significant impacts to the environment resulting from the implementation of the project alternative.

# Appendix A







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